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Rice

OUTLOOK & SITUATION

Contents

	Page
U.S. Outlook and Situation	2
Production and Supplies	2
Record Stocks	2
Total Use	2
PIK Entitlements	3
Price Outlook	3
Recapping 1982/83	4
World Outlook and Situation	5
Production	5
Trade	5
Looking Ahead to 1991	6
Special Articles	
The Value of Rice Quality	8
Dynamic Relationships of Rice Prices	12
List of Tables	28

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Summary

Short Crop To Reduce Stocks; Moderate Price Gains Likely

This season's rice supply will be the lowest in 3 years, despite record high beginning stocks. A short crop, the result of delayed plantings and acreage reduction programs, will reduce 1983/84 supplies to 171 million cwt. Beginning stocks, estimated at 67 million cwt (rough equivalent), will account for nearly 40 percent. Based on conditions around September 1, the 1983 crop is forecast at 104 million cwt, down 33 percent from last year and 43 percent under the 1981 record.

Total use will exceed this year's production by almost 36 percent, which should lower ending stocks to about 30 million cwt on July 31, 1984. With rice exports forecast to only match last season, a modest increase in food, seed, and brewers' use is expected to bring total disappearance in 1983/84 to 141 million cwt, marginally over last season's 137 million cwt.

Heavy participation in the PIK program is a key element in lowering stocks. On August 1, participants in Louisiana, Texas, and Florida were entitled to about 13.1 million cwt; on September 1, entitlements were due to participants in Arkansas and Mississippi; and on September 15, to participants in California and Missouri. Altogether, nearly 40 million cwt of rice will be received by participants for withdrawing about 1 million acres from production last year. An additional 783,000 acres were withdrawn under the program's combined acreage reduction and cash diversion provision.

Average farm prices for 1983/84 are forecast between \$8.50 and \$10 per cwt, a moderate improvement over last season's \$8.18. However, the price outlook is clouded by several factors: Supplies will remain adequate, the price at which farmers will market their PIK rice is still unknown, and a poor export outlook may limit price strength. In April and May, average prices climbed over the loan rate, but fell steadily through July. Because ending stocks will be drawn down, some upward movement in prices is anticipated. But the forecast range is still below the 1983/84 target price of \$11.40 per cwt, making another year of large deficiency payments likely.

Projections for rice use by type indicate that long grain stocks could fall below 10 million cwt this season, and medium and short grain stocks below 23 million. The lower level of total rice stocks and their distribution by type may buoy farm prices.

World rough rice production is forecast to top 420 million tons in 1983/84, setting a record despite the big decline in U.S. production. Outside the United States, production is expected to increase a little over 1 percent, but the 33-percent U.S. decline will keep the world gain at a slight 0.7 percent.

World rice consumption in 1983/84 is forecast at nearly 284 million tons (milled basis), down slightly from 286 million estimated for 1982/83. Despite reduced consumption, world ending stocks of milled rice are expected to shrink for the fifth consecutive year, to less than 15 million tons, compared with 16 million last season.

In calendar year 1984, world trade is expected to decline roughly 3 percent, to 12 million tons from 12.4 million in 1983. Moreover, the U.S. rice export position will probably not improve from last year's disappointing level, because U.S. prices remain high compared with those of Asian competitors.

This issue of the **Rice Outlook and Situation** includes two special articles dealing with rice prices. The first article, "The Value of Rice Quality," discusses how quality determines rice prices, and suggests ways producers can improve the quality of their rice, and hence increase the average market price they receive. The second, "Dynamic Relationships of Rice Prices," examines domestic and world price relationships.

U.S. OUTLOOK AND SITUATION

1983 Rice Program and Late Plantings Lower Production and Supplies

The 1983 rice program combined with delayed plantings will push U.S. rice supplies in 1983/84 to the lowest level in 3 years, even though beginning stocks were estimated at a record 66.6 million cwt. Total U.S. rice supplies are forecast at 171 million cwt, with beginning stocks accounting for well over a third. As of September 1, production was estimated at 104 million cwt, almost 33 percent less than last year, 43 percent under the record set in 1981/82, and the lowest since 1977.

Nearly all of the decrease in production is attributable to high participation in the 1983 rice program that included acreage reduction, paid land diversion, and payment-in-kind (PIK) provisions. A mild winter before planting aggravated pest and disease problems in some States this summer, while an unseasonably cool, wet spring delayed planting and slowed crop maturity. As a result, crop yields are lower than expected. Normally, a substantial drop in planted acreage would boost average yields because producers often farm the fewer acres more intensively. Nationally, 1983/84 average yields are estimated at 4,627 pounds per acre, down from 4,742 in 1982/83.

A similar pattern occurred in all major rice-producing States: roughly 30-percent declines were reported in acreage and production, and yields averaged lower in every State except Mississippi, which held steady with last season's 4,200 pounds.

A brief summary of the situation in the South and California shows:

- Arkansas acreage is down 30 percent, from 1.3 million acres harvested in 1982/83 to 935,000 this year. With estimated yields averaging 4,250 pounds per acre, production is expected to be just about 40 million cwt, compared with 57 million last season.
- California, usually not a strong participant in Government commodity programs, reduced harvested acreage this year by 37 percent, the largest decline of any rice-producing State. Acreage harvested this year will total 337,000 acres, compared with 1982/83's harvest of 535,000. Average yields also are forecast lower this year, at 6,800 pounds per acre, giving California an estimated rice crop of almost 23 million cwt, 37 percent less than last year's crop of 36.6 million.
- Louisiana acreage dipped 36 percent from 598,000 last year to 385,000 this year. With yields currently estimated at 4,000 pounds per acre, compared with 4,160 last season, 1983/84 production in Louisiana is expected to slip to 15.4 million cwt, 38 percent less than last year's 25 million.
- Mississippi had the third largest percentage decline in acreage, falling 34 percent from last year's 235,000 acres to 155,000. However, yields are expected to hold steady with last season, at 4,200 pounds. Nevertheless, production in Mississippi is expected to plummet by a third, falling from 10 million cwt in 1982/83 to 6.5 million.

- Texas acreage decreased by 20 percent, falling from last year's 474,000 acres to 379,000 this year. Lower yields, averaging 4,500 pounds per acre compared with 4,690 last year, will likely plunge production downward by 23 percent to 17 million cwt from last season's 22 million.
- Missouri harvested acreage will drop for the first time since 1976/77, falling 31 percent from last year's record acreage of 80,000 to 55,000 this year. Yield is also expected to decline from the 1982/83 average of 4,480 pounds per acre to 4,200 in 1983/84. Although rice production in Missouri is only a small portion of the U.S. rice crop, its harvest is likely to slide 36 percent, from about 3.6 million cwt last year to barely 2.3 million cwt this season.

Record Stocks Claim A Third of Supplies

Although production plunged by roughly 30 percent in every State, beginning stocks on August 1, 1983 (rough equivalent basis) were at least a third greater, compared with a year earlier, in every State but Mississippi. Beginning stocks will claim more than a third of 1983/84 total supplies. California has the largest carryin of 27.8 million cwt, up 32 percent from last year's 21 million. Stocks in Texas were more than double last year's, climbing from 4 million cwt to 8.5 million. In Arkansas, the largest rice-producing State, carryin jumped nearly 40 percent, from 14.4 million cwt on August 1, 1982, to 20 million this year.

Overall, long grain stocks on August 1, 1983, totaled 26.4 million cwt, nearly 40 percent of the total carryin, and substantially more than last year's carryin of 18 million cwt. Medium grain stocks took the largest share of carryin for the second year in a row, totaling 36.5 million cwt—almost 55 percent of the total. Even though the total amount of medium grain stocks increased from last year's 29 million cwt, their share of total beginning stocks declined 5 percent. Similarly, short grain stocks doubled from last year's 1.6 million cwt to 3.7 million this August. Last year, short grain stocks claimed 3.3 percent of the total beginning stocks; this year their share rose to over 5 percent.

Total Use To Remain About Unchanged, But Stocks to Fall by Half

Total disappearance of U.S. rice in 1983/84 is expected to be slightly above last season's 137 million cwt. Exports are forecast to match the 1982/83 level. A modest increase in food, seed, and brewers' use is expected to bring total disappearance up to 141 million cwt this sea-

Rice stocks by type August 1, 1982 and 1983

Type	Rough		Milled ¹		Total	
	1982	1983	1982	1983	1982	1983
Million cwt.						
Long	14.6	21.4	3.6	5.0	18.2	26.4
Medium	26.1	33.4	3.1	3.1	29.2	36.5
Short	0.7	3.5	0.9	0.2	1.6	3.7
Total	41.4	58.3	7.6	8.3	49.0	66.6

¹Rough equivalent.

son. Total use will exceed production by 36 percent, which should lower ending stocks from the record 67 million cwt on July 31, 1983, to about 30 million—cutting them by more than half. Prices should strengthen as stocks are drawn down through the marketing year.

Disappearance by Type of Rice— Tight Long Grain Market

The total disappearance figures indicate only marginal improvement in market use, but when the numbers are broken down by type of rice, a slightly different picture emerges, especially with the possibilities of price strength based on ending stocks. The 1982/83 crop year ended with combined medium and short grain stocks exceeding a record 40 million cwt. Stocks of long grain were also large at 26 million cwt. Projections for rice use by type indicates that long grain stocks could fall below 10 million cwt in 1983/84, and medium and short grain stocks could fall below 23 million.

**Estimated 1982/83 supply and disappearance,
by type of rice¹**

Item	Total	Long	Medium/short
<i>Million cwt</i>			
Beginning stocks	49.0	18.1	30.9
Production	154.2	94.6	59.6
Supply ²	203.8	113.1	90.7
Domestic disappearance	68.0	38.3	29.7
Exports	69.2	48.4	20.8
Total use	137.2	86.7	50.5
Ending stocks	66.6	26.4	40.2

¹Rough equivalent. ²Includes imports.

**Estimated 1983/84 supply and disappearance,
by type of rice¹**

Item	Total	Long	Medium/short
<i>Million cwt</i>			
Beginning stocks	66.6	26.4	40.2
Production	103.9	69.7	34.2
Supply ²	171.1	96.5	74.6
Domestic disappearance	72.0	41.0	31.0
Exports	69.0	48.0	21.0
Total use	141.0	89.0	52.0
Ending stocks	30.1	7.5	22.6

¹Rough equivalent. ²Includes imports.

The assumptions regarding use allocation by type are the same as those outlined in the March Rice Outlook and Situation. In that issue, exports were allocated according to previous years' shares by type. In 1982/83, roughly 70 percent of the total exports were long grain; assuming a similar export market in 1983/84, long grain exports would total 48 million cwt. Domestic use comprises food, seed, brewers' use, and a residual, with 60 percent of the food use allocated to long grain rice. Seed use is allocated by type according to the share of production, and brewers' use is assumed to reflect availability and price, with the bulk supplied by medium grain rice. Thus, long grain may claim 41 million of the total 72 million cwt projected for domestic disappearance in 1983/84. The remaining 31 million would be accounted for by medium and short grain rice.

Both the lower total rice stocks and the distribution of those ending stocks by type should buoy farm prices in 1983/84.

Producers Begin Receiving PIK Rice on August 1

Producers who participated in the PIK program have received rice entitlements. Producers in Louisiana and Texas received entitlement to an estimated 13.1 million cwt of rice on August 1, 1983. Texas producers received nearly 7 million, and producers in Louisiana received just over 6 million. Arkansas and Mississippi PIK participants received 13.6 million and 3.6 million cwt of rice, respectively, on September 1. PIK entitlements to California, Missouri, and minor States were made on September 15.

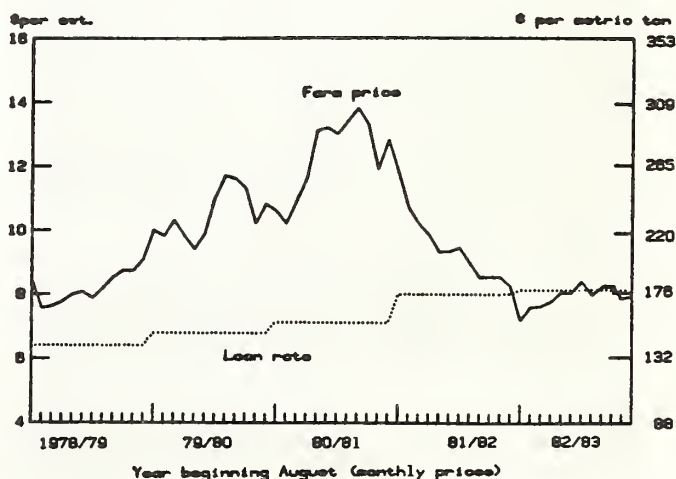
Producers in California received the second largest amount of rice under the PIK program—8.5 million cwt, while Missouri producers were eligible for less than 1 million. Altogether, participants in the 1983 PIK program will receive almost 40 million cwt of rice for withdrawing almost a million acres from production under the PIK provisions alone. Producers have 5 months to take delivery of the PIK rice, with Commodity Credit Corporation (CCC) paying storage during that time.

Price Outlook Highly Uncertain

At present, average farm prices for the 1983/84 season are forecast in the range of \$8.50 to \$10 per cwt, but there is a lot of uncertainty surrounding this outlook. A major uncertainty is how producers will market PIK rice—what will be an acceptable price when no production costs were incurred? Also, with the gap between U.S. and Thai prices remaining large compared to historical relationships, and with favorable world crops expected, the U.S. export picture for rice remains uncertain at best.

These factors plus an adequate world rice supply have kept average prices from rising this summer, despite an expected 33-percent decline in production. Average prices this spring and summer climbed above the loan rate in April and May, but fell through July.

Rough Rice Farm Prices and Loan Rates



Nevertheless, the 1983/84 forecast remains cautiously optimistic; declining stocks and less uncertainty in the market, once harvest is completed and PIK payments made, may spark an upward movement in prices. In addition, world rice prices began to increase in August, slightly closing the gap with U.S. rice prices. Even with a modest increase, the current forecast will still be below the 1983/84 target price of \$11.40 per cwt, making large deficiency payments likely again in 1983/84.

Recapping 1982/83—Early Season Forecasts Prove Erroneous

Last year at this time, a markedly different outlook was forecast for 1982/83 than what evolved. Domestic disappearance was forecast at 62.5 million cwt; exports were projected to recover to the record reached in 1980/81—91 million cwt. The export forecast was reduced early in the season to 83 million cwt, and by December was reduced further to 69 million. Initially, ending stocks were expected to drop below 45 million cwt, with farm prices forecast to average between \$8.25 and \$9.75 per cwt.

Instead, domestic use remained about the same as last year, and exports failed to reach 70 million, hitting the revised December forecast. The 1982/83 crop year wound up with a record carryover of nearly 67 million cwt with average farm prices throughout the season hovering around the loan rate of \$8.14 per cwt.

What happened to dramatically alter expectations for export demand, domestic use, carryover, and prices? Could exports drop again in 1983/84? Or, were the initial forecasts simply unfounded? To address these questions, consider the assumptions that were present at the onset of the 1982/83 marketing year.

Besides the assumptions on which the forecast were based, the general economic outlook was important for both the U.S. and world economies. Also remember, U.S. rice producers had just experienced a 10-percent decline in export sales during 1981/82—a decline considered something of an aberration. There was little reason to expect that the disappointing export year in 1981/82 was a prelude to further disappointment. The assumptions included:

- South Korea was expected to purchase the remainder of its 1980 agreement with the U.S. rice industry—its failure to purchase and ship the agreed upon amount was a primary reason for the decline in 1981/82 exports. It was assumed that South Korea would take delivery of 500,000 tons of rice during 1982/83. This hope quickly faded. At the end of July 1983, 213,000 tons of rice were delivered to South Korea, an amount equal to only 37 percent of the prior year's shipments and barely a sixth of the record shipments of 1980/81.
- Despite the sluggish growth rate forecast for the world economy, developing nations were expected to experience a 5.5-percent growth rate in their GNP; many of these developing countries are key markets for U.S. rice.
- Serious crop shortfalls were projected for India's rice and wheat crops. Although there were no expectations that India would purchase rice from

the United States, there was a possibility that India would purchase rice in the world market, thus boosting import demand and helping U.S. sales indirectly. Furthermore, it was unlikely that India would be able to fulfill its agreement to supply the Soviet Union with rice, and this might also have boosted world import demand.

- Although an acreage reduction program reduced U.S. rice production from 1981/82 record levels to 154 million cwt, the carryin for the crop year was significant enough to produce record supplies. Prices were expected to fall, stimulating foreign demand. Prices did fall down to the floor provided by the loan rate, but key competitors such as Thailand reduced prices to move their surpluses, and the price gap widened between the United States and other exporters.
- A drawdown in world stocks of rice was forecast, which could have put upward pressure on world trade volumes.
- A modest decline in Thailand's rice crop was expected to draw stocks down to normal levels. Although in the short term, this was not expected to alter Thai exports—forecast at 3.3 million tons—it was expected that lower stocks might ease the pace of Thai exports and lead to firmer world prices toward the latter part of the 1982/83 crop year.
- European Community (EC) policies were expected to continue favoring the importing of rough rice for domestic milling and reexport, but this loophole in the inward processing scheme was closed, dropping sales to the EC significantly.
- Domestically, brewers were forecast to steadily increase their demand for rice, and seed use was expected to be higher since the PIK program was not anticipated.

It would be difficult to claim that any assumption was unreasonably optimistic. The continued delay in shipments to South Korea undoubtedly cramped the pace of U.S. rice exports; however, successes in some markets were offset by disappointments elsewhere.

The second most notable disappointment in exports was in Nigeria, where shipments fell by more than 50 percent from 1981/82; faced with declining revenues from petroleum, U.S. rice was priced out of their market and Nigeria shifted purchases to Thailand. But U.S. shipments to other African countries outpaced the previous 2 years by a wide margin, although these were primarily P.L.480 shipments. In the Middle East, Saudi Arabia held steady, and sales to Iraq—boosted by official export credits—were the highest in 3 years. Since the rest of the Middle East went elsewhere for rice purchases, U.S. exports slid to a third of 1981/82, and were less than half of the 1980/81 level.

Although sales to the EC kept pace with 1980/81 exports, they were less than half of exports in 1981/82 as the EC shifted policies regarding rough rice imports for milling and reexport. Shipments to the rest of Western Europe also slipped by 40 percent from the previous year.

Two factors apparently prevented U.S. rice exports from regaining the momentum achieved in 1980/81. First, the duration of the world recession and the depth and distribution of credit problems in many markets were not accurately anticipated. The U.S. economy sputtered its way into a recovery, taking over a year to establish credibility in financial markets. This prolonged the pace of the world economic recovery, which is still tenuous. Second, the loan rate became a floor for U.S. export prices. In spite of a drawdown in world stocks, a smaller crop in India, and the elimination of a large exportable surplus in Thailand and Pakistan, world prices did not strengthen. The gap between U.S. and Thai prices for comparable milled quality rice (Thai 100 percent grade B and U.S. No. 2, 4 percent) at The Hague averaged \$152 for the year. The gap narrowed to \$113 in December, but continued to widen thereafter, ending the year with a difference of \$205 per ton. Thus, particularly price-conscious importers switched from U.S. rice to less expensive sources, such as Thailand. In addition, sales from other suppliers, such as Taiwan, rose, with suppliers anxious to rid themselves of burdensome supplies.

Average monthly prices throughout the 1982/83 season were an apt reflection of a market characterized by record supplies and eroding demand. Prices wavered around the loan rate of \$8.14 per cwt during the crop year, exceeding it only three times, in February, April, and May. With prices averaging less than \$8 per cwt, rice producers received over \$250 million in deficiency payments last season.

The grim outlook, plus farm prices that averaged at or below the current loan level, prompted U.S. rice growers to enroll 96 percent of the total rice base acreage in the 1983 rice program. This was the highest enrollment of rice producers ever, and the highest participation of any program crop this year. With producers electing to withdraw almost 1.8 million acres, the 1983/84 rice crop will be harvested from an estimated 2.25 million acres.

WORLD OUTLOOK AND SITUATION

As U.S. Production Falls, Foreign Exporters Boost Production

World rough rice production reached 417.4 million tons in 1982/83, and is forecast to set a record at over 420 million tons in 1983/84. Production in the rest of the world is expected to increase by a little over 1 percent, but a 33-percent decline in U.S. production will limit the world increase to a slight 0.7 percent.

The biggest gains in production from 1982/83 to 1983/84 are expected in India, up nearly 17 percent from the drought-reduced levels of 1982/83, because of a 4-percent increase in acreage and an 11-percent jump in yields; and in Brazil, where a 15-percent increase in area coupled with a 5-percent yield improvement will likely push 1983/84 production up 22 percent over the depressed level of last year. Other gains are forecast for Thailand, with modest gains showing in Pakistan, Bangladesh, South Korea, and Japan.

Lower rice crops are forecast for China—down 6 percent—with lower yields offsetting a slight area

increase. Rice crops in Burma and Indonesia are also forecast slightly lower from 1982/83.

World rice consumption in 1983/84 is forecast at about 284 million tons, milled basis, down slightly from 286 million tons estimated for 1982/83. Declines in consumption are expected in China and Bangladesh, but India and Indonesia will likely boost consumption, and South Korea's consumption may be unchanged from last season.

World ending stocks of milled rice are expected to shrink for the fifth consecutive year, to less than 15 million tons from last year's estimated 16 million. The U.S. carryover is expected to fall by nearly 50 percent, but ending stocks may rise in Bangladesh, India, and Thailand. Total foreign ending stocks are expected to decline from 14.1 million tons in 1982/83 to 13.5 million in 1983/84. No change is expected in South Korea's ending stocks. In India, imports plus production will raise stocks to 3.5 million tons, a slight increase from 3 million tons in 1982/83.

World Rice Trade Expected to Shrink

World trade of milled rice during calendar year 1984 is forecast to decline roughly 3 percent from 1983, from 12.4 to 12 million tons. Import demands from key buyers such as South Korea and Indonesia may decrease, and exports in the United States and other countries will slip.

In South Korea, 1983/84 production may rise again for the third year in a row. Imports, however, are expected to decline by half—falling from 200,000 tons in calendar year 1983 to 100,000 tons next year.

Although production and carryover are also likely to fall modestly in Indonesia, the decline won't hurt consumption, which is expected to rise in 1983/84. Increased buying by Indonesia in the world market has helped stabilize supplies somewhat, but their import demand may be moderated in 1984. Import demand from Indonesia may reach 1.5 million tons in 1984.

In key exporting countries, exports during calendar year 1984 are forecast lower for Thailand, Japan, and Pakistan. Increased production in Thailand will likely boost consumption and ending stocks, but current projections for exports total 3.4 million tons in 1984, compared with 3.6 million estimated for 1983.

Pakistan's increase in 1983/84 production is also not expected to show up in increased exports, which are forecast to decline from 1.3 million tons during calendar year 1983 to 1.2 million in 1984.

World Economy Picking Up, But High U.S. Prices Could Stunt Exports

The world economic recovery should continue into 1984. The U.S. recovery, which began in January, seems to be picking up strength; world economic growth for 1983 is forecast to be about 2 percent, up from a dismal 0.5 percent in 1982. Most of the pickup in growth stems from the improving U.S. economy. Although the potential for growth in developing countries is improving, a buying surge by those countries could be stunted by higher

prices and credit constraints. Economic growth, foreign exchange availability, and domestic supplies will affect total rice imports this year in major markets. The U.S. share will likely remain depressed if the price differentials between the United States and other suppliers remain unusually large. The level and distribution of U.S. export credits could, however, help U.S. rice exports.

What does all this mean for U.S. rice producers? As U.S. rice production falls and U.S. export prices remain high relative to competitors, U.S. rice becomes less attractive to foreign buyers who are only just beginning to ease themselves out of serious economic recessions. In short, it means continued heavy foreign competition for rice exports. It means the U.S. position in world rice trade is increasingly becoming that of a residual supplier, with a weak negotiating posture in vying for and maintaining a strong world market share for rice.

Looking Ahead to 1991

It is increasingly obvious that future growth of the U.S. rice industry depends upon the strength of export markets. It is also apparent that U.S. exports react to changes in world market conditions rather than cause those changes. Recently, U.S. rice exports have satisfied a growing, dichotomous market, made up of both affluent buyers who can afford U.S. rice and buyers who often require Government assistance.

Is this an accurate assessment of the future of U.S. rice exports? According to USDA analysts who have looked at world rice consumption and trade through 1991/92, there will likely be strong demand for rice imports, but the U.S. role in world rice trade is less certain. The analysts generally agree that the same factors that shaped demand for agricultural products in the past—demographics, economics, and politics—will continue to influence demand and trade through the remainder of this decade.

World food grain demand is projected to increase 2 percent per year through the 1980's, fueled by population and income growth. But in the developing countries, food demand is expected to be stronger, sparked by high population growth rates and the need to improve presently inadequate diets. These two factors—population and pressure to upgrade diets—will likely translate any income growth into increased food demand. That could mean a growth in demand for rice imports by these countries. With food grain demand expected to increase by 3 percent annually in the developing countries, oil exporting regions such as the Middle East and Nigeria could boost rice imports significantly by 1991/92.

Overall, USDA analysts suggest that developing countries will be unlikely to improve their levels of food self-sufficiency, and will become increasingly dependent on trade to satisfy food demands. At the same time, however, the exporting nations may find themselves increasingly dependent on world markets to clear future production increases. The result: continued stiff competition for export markets.

Where will the United States be in 1991/92 in the world rice market? USDA analysts look for the U.S. rice export level to improve, but only to the record levels achieved in 1980/81—at about 2.9 million tons (milled basis). World exports in 1991/92 may top 14 million tons, giving the United States about a fifth of the world rice trade.

The table below shows some projections for developing countries of the world, grouped into three regions: Africa and the Middle East, Middle and South America, and Asia. These countries have made remarkable gains in rice production since 1979. From 1979 to 1982, total rice production in these regions increased 13 percent, from 131 million tons of milled rice in 1979 to nearly 148 million tons in 1982. The bulk of the increase in production has come from the developing countries in Asia, who have promoted the use of high-yielding varieties of rice successfully, and shifted domestic policies to encourage expanded rice production. By 1987, rice production in these countries could increase to almost 182 million tons, and by 1991/92, come close to 200 million.

Despite the increase in production, however, higher incomes and population growth will mean continued demand for rice imports. Rice imports from 1979 to 1982 declined from 8.8 million tons in 1979 to 8 million in 1982; but wide swings characterized the intervening years. In 1980, imports to the developing regions jumped over 10 million tons, but fell the following year to less than 7.5 million. By 1987, assuming average weather, imports of rice could be almost 11 million tons, and climb to 12.5 million by 1991.

In Africa and Middle East developing countries, rice imports are expected to increase steadily through 1991/92. In 1979, these countries produced about 6.6 million tons of milled-equivalent rice—only about 10 percent more than the record U.S. rice crop of 1981/82. However, consumption by these countries is more than five times that of the United States. Imports of rice into this region totaled about 3.8 million tons in 1979 and rose to 4.8 million in 1981. By 1987, production is expected to increase significantly, but so will consumption, implying higher rice imports that may be just short of 6 million tons.

Milled rice projections to 1991/92

Developing Region	Production			Imports			Consumption		
	1981	1987	1991	1981	1987	1991	1981	1987	1991
<i>Million metric tons</i>									
Africa, Middle East	6.2	7.6	8.0	4.8	5.9	6.8	11.0	13.7	15.0
Middle, South America	10.9	12.1	13.4	0.4	1.0	1.0	10.4	12.5	13.8
Asia	143.7	157.8	174.1	2.3	3.5	4.2	140.1	162.4	178.4
Total all regions	160.8	177.5	195.5	7.5	10.4	12.0	161.5	188.6	207.2

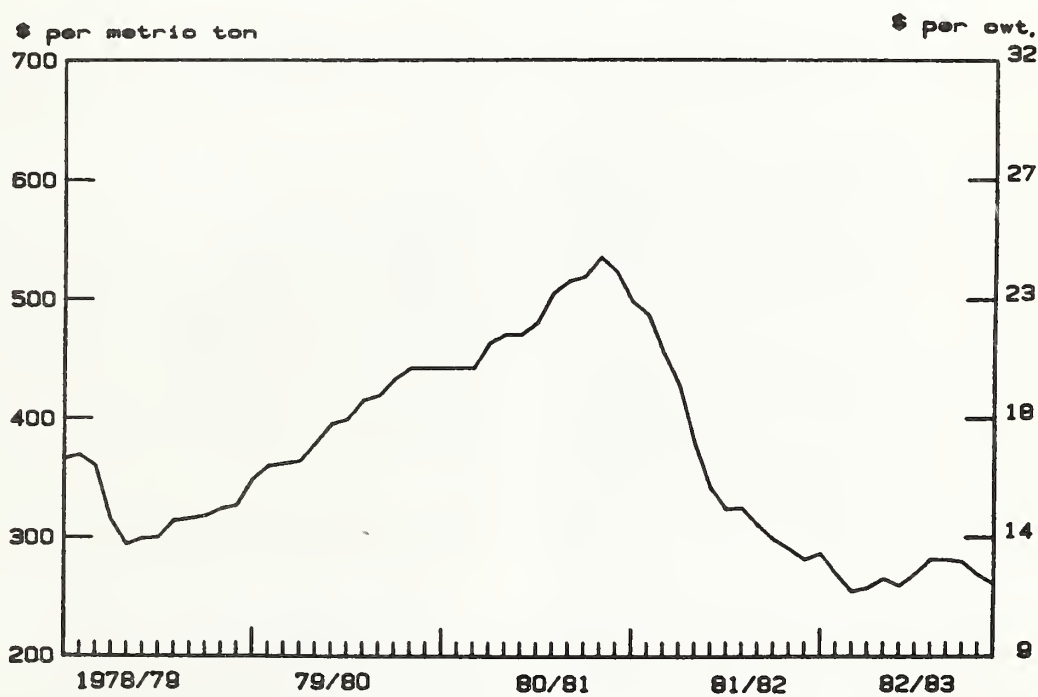
Source: USDA, Economic Research Service.

Looking further ahead to 1991/92, the Middle East and African developing countries will likely continue to make strides in production, but import demand may continue to grow to 6.8 million tons. In the past, the area has proved a strong market for U.S. rice exports; if the United States can improve its competitive position, exports to these countries should remain strong. Also, policy changes affecting Iranian purchases could be significant. But the improved quality and lower prices of competitor rice—notably Thailand—will become more attractive to price-conscious buyers and assure stiff competition for a U.S. market share.

Thus, it appears that as world rice production and consumption is likely to increase steadily through this

decade and into the 1990's, there will be ample room for expanding world rice trade. But, the growth of U.S. rice exports will clearly depend on U.S. market strategy. With current price levels and policies in some markets, the United States is not the preferred supplier. If world prices strengthen and the gap between U.S. and Thai prices narrows, U.S. rice may become more attractive to these growing markets. But at best, this will remain an untenable situation, with U.S. export strength hinging on competitors' price policies. To regain and hold a firm position in rice export markets implies stronger import demand than currently forecast, or lower U.S. export prices—unlikely given the current loan level of support.

Milled Rice: Thailand Export Prices*



* White 5X broken, F.O.B. Bangkok.

THE VALUE OF RICE QUALITY

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Abstract: This article examines the importance of rice quality factors—particularly those that can be controlled by farmers. Factors in addition to whole kernels, test weight, mill yields, and the general supply/demand level that may influence the price a farmer can expect to receive for rough rice were investigated. The analysis suggests that peck—kernel damage caused by stinkbugs—has the greatest impact on prices. Farmers can likely improve expected net returns by controlling the presence of stinkbugs in fields.

Keywords: Rice prices, quality value, quality factors discounts.

Introduction

The value of rough rice, as with most agricultural commodities, is influenced by many factors. The milling of rough rice produces both whole kernels (head rice) and several byproducts: broken, brewers, bran, millfeed, and hulls, with whole kernels the most important terms of revenue. Thus, the value of rough rice is expected to be directly related to its yield of whole kernels, its quality, and the prevailing supply and demand situation for rice. U.S. farmers market rough rice through contracts with mills, bid/acceptance markets, negotiated sales, and cooperative mills on a pooled basis. Although six cooperatives market over half of U.S. rice production, bid/acceptance markets are the second most important marketing channel in Louisiana and Texas, accounting for approximately one-third of the rough rice marketed in those States annually (Mullins, Grant, and Krenz). The relative importance of quality factors for rough rice prices can be observed in bid/acceptance markets in the Texas Gulf Coast.

Market Data

Data used for this analysis are sales records and grade sheets obtained from three bid/acceptance rice markets in the Texas Gulf Coast for 1981/82. Results may vary because of different locations, type of market, and year. However, the results should generally apply to U.S. rough rice.

The underlying hypothesis of this analysis is that, at any point in time, rice is valued for its use characteristics, and rice prices vary directly with the specific amounts of each quality factor present. Thus, the observed rice price is a composite of the values of the product's quality

characteristics. However, since observed prices are also affected by aggregate demand and supply conditions over time, the weekly price for U.S. No. 2 long grain rice, f.o.b. mill, in Houston was used to reflect general rice prices over time. All prices are for long grain rice.

Grading Interpretation

The most significant quality factors—whole kernel yield, total mill yield, and test weight—were observed in all three markets. No data was available on green rice and chalkiness in market 2, or on green rice in market 3. Both markets 1 and 2 have a larger proportion of number 1 and 2 grade rice, and both markets have better average grades than market 3. Yet, bid price, whole kernels, and total mill yields averaged higher in market 3 than markets 1 and 2. Even after allowance for the higher whole kernel and total mill yield, the difference in bid price and grades suggests that private graders may subjectively interpret standards or grading procedures, thus affecting prices offered in the market (table 1).

Subjective interpretation of the standards or grading procedures could also affect the loan rate a producer receives. Federal grade, whole kernel yield, broken, smut, and length of grain are the only factors considered by the Agricultural Stabilization and Conservation Service (ASCS) to determine loan rates for rice stored in certified commercial warehouses. For rice stored at such facilities, grades established by local private inspectors are accepted by ASCS in determining the loan values if a commingled warehouse receipt is available (Decker, Parker). All rice stored in on-farm facilities initially receives the full national average loan rate, with no discounts/premiums for quality or class until delivery. Settlement for these factors is made if the rice is forfeited to the Government. At that time, rice is graded by Federal graders if the identity of the lot is to be preserved, or by private graders if stored with a commingled warehouse receipt. If private graders are inconsistent with Federal graders in interpreting standards, then the realized loan value would be greater or less than the "true" Federally-established loan value.

¹Grant is an agricultural economist with the National Economics Division, Economic Research Service (ERS), USDA; Rister is an assistant professor at Texas A&M University; and Brorsen is an assistant professor at Purdue University. This research was funded in part by the Texas Rice Research Foundation under the Econo-Rice Project, the Texas Agricultural Experiment Station (Project 6507), and ERS. *Economic Value of Rice Quality Factors*, an expanded version of this article, is forthcoming from the Texas Agricultural Experiment Station.

Table 1.—Averages at three Texas rice markets, 1981/82¹

Variable	Unit	Texas bid/acceptance markets		
		Market 1	Market 2	Market 3
Observations	No.	380	437	600
Bid price	Dollars/cwt	9.73	9.69	10.03
Mill price	"	23.24	22.26	23.72
Lot size	Cwt	4,983.67	4,131.13	4,435.45
Whole kernels	Percent	55.12	55.37	57.26
Total mill	"	68.40	68.43	69.53
Grade	No.	2.48	2.05	3.31
Bladders	"	3.09	3.30	2.84
Seed	"	18.38	8.34	19.06
Peck	Percent	2.69	1.42	2.64
Red rice	"	.99	.22	.84
Smut	"	.43	.59	.74
Green	"	3.02	N.A.	N.A.
Chalk	"	2.00	N.A.	2.26
Heat damage	"	.03	.30	.35
Test weight	lbs/bu	43.36	45.34	44.37
Grade 1	Percent	4.7	46.2	0
Grade 2	"	85.0	28.0	31.8
Grade 3	"	6.6	13.7	36.3
Grade 4	"	.5	5.3	14.3
Grade 5	"	7.9	2.5	7.5
Grade 6	"	5.3	4.3	7.0
Sample	"	0	0	3.0

¹Confidentiality of data sources prohibits exact designation of the markets' locations. N.A. = Not available.

Value of Quality Characteristics

Bid prices were studied in relation to the mill price and quality characteristics to evaluate discounts associated with quality variables. Only whole kernels, weed seed, and peck were significant quality factors in all three markets. Total mill yield was significant in markets 1 and 2, but marginally important in the other market. Red rice was significant in markets 1 and 3, but not important in market 2. Test weight, smut, chalk, heat damaged kernels, and other foreign material influenced the value of rice in one or two of the markets, but not in all three markets.

The values associated with these quality factors are extremely important to producers, but the return from controlling negative quality factors is not explicitly known (Stansel, Newman). Table 2 summarizes the estimated economic impact of quality factors on bid prices in the study markets both on a per cwt and per acre basis, assuming annual yields of 47 cwt of rough rice per acre. The discount caused by red rice ranges from \$6.58 to \$11.75 per acre, while that of weed seeds ranges from \$2.82 to \$11.75 per acre. These values do not reflect any yield loss associated with the red rice and weed plants; consequently, they understate the investment producers can economically allocate toward control of the quality factors.

The impact of peck damage, caused primarily by stinkbugs, is much greater than red rice and weed seed. In addition to the direct discount associated with visible kernel damage, there is also an indirect discount associated with a loss in whole kernels, total mill yield, and test weight. The total discount associated with peck ranges from \$17.86 to \$63.92 per acre. Based on a value of about \$461 per acre of rice, (the average price in the three markets, which is \$9.82 per cwt, times 47 cwt per

acre), peck would have lowered per acre returns (all other things equal) 3.9 to 13.8 percent. This implies that more than yield losses should be considered in evaluating the costs of stinkbug control. Although its difficult to completely eliminate stinkbug damage, the results suggest the marginal benefit received may justify additional pest control.

Discounts are also associated with chalk, heat damage, and smut. Chalk was significant only in market 3 at a discount level of \$24.44 per acre, or a 5.3-percent loss in returns. The losses associated with heat-damaged kernels were minor, ranging from no discount to less than \$1 per acre. The losses associated with these discounts depend on the complete elimination of factors that lower rice quality. But this is neither economically profitable nor physically feasible. At some point, the additional costs exceed the additional returns obtained from the increased quality control. Table 3 shows these marginal discounts associated with a one-unit change in the respective quality factor. In other words, if peck damage can be reduced by one unit, what will the producer save in terms of lost revenue from the discount factor? The reduction in peck is worth \$11.33 to \$23.88 per unit per acre. A one-unit reduction of the other quality factors is worth up to \$22.32 per unit per acre. Economic decisions about the relative value of quality control must be evaluated on the basis of marginal costs relative to the associated marginal returns suggested by these estimates.

Summary

Observed rice prices are a composite of the values of quality characteristics at a given point in time. The subjective interpretation of the standards and grading procedures could affect the loan rate a producer receives when ASCS accepts the findings of private graders. If

Table 2.—Economic impact of quality factors at three Texas rice markets, 1981/82¹

Quality factor	Effect on price in Texas bid/acceptance markets		
	Market 1	Market 2	Market 3
	<i>Dollars per cwt</i>		
Peck			
Direct	-.74	-.28	-.48
Whole kernel loss	-.39	NS	-.06
Total mill loss	-.16	-.10	NS
Test weight loss	-.07	NS	-.10
Total	1.36	-.38	-.64
Red rice	-.25	NS	-.14
Weed seed	-.25	-.06	-.09
Chalk	NS	NS	-.52
Heat damage	-.01	NS	-.02
Smut	NS	-.06	-.06
	<i>Discount per acre (\$) ²</i>		
Peck			
Direct	-34.78	-13.16	-22.56
Whole kernel loss	-18.33	NS	-2.82
Mill yield loss	-7.52	-4.70	NS
Test weight loss	-3.29	NS	-4.70
Total	-63.92	-17.86	-30.08
Red rice	-11.75	NS	-6.58
Weed seed	-11.75	-2.82	-4.23
Chalk	NS	NS	-24.44
Heat damage	-.47	NS	-.94
Smut	NS	-2.82	-2.82

NS = not significant at the 5-percent level, or the data is missing; all other factors significant at the 5-percent level. ¹Estimates do not consider yield loss due to quality factors. ²Assumes an average yield of 47 cwt/acre and the respective factors occurring at the mean levels designated in table 1.

Table 3.—Discounts associated with a one-unit change in quality factors, 1981/82¹

Quality factor	Effect on price in Texas bid/acceptance markets		
	Market 1	Market 2	Market 3
	<i>Dollars per cwt</i>		
Peck			
Direct	-.274	-.195	-.181
Whole kernel loss	-.146	NS	-.023
Total mill loss	-.060	-.070	NS
Test weight loss	-.027	NS	-.037
Total	-.508	-.264	-.241
Red rice	-.014	-.008	-.165
Weed seed	-.014	-.008	-.004
Chalk	NS	NS	-.229
Heat damage	-.475	NS	-.059
Smut	NS	-.100	-.079
Test weight	.100	NS	.156
	<i>Dollars per acre (\$) ²</i>		
Peck			
Direct	-12.88	-9.16	-8.51
Whole kernel loss	-6.86	NS	-1.08
Total mill loss	-2.82	-3.29	NS
Test weight loss	-1.27	NS	-1.74
Total	-23.88	-12.41	-11.33
Red rice	-11.84	NS	-7.76
Weed seed	-.66	-.38	-.19
Chalk	NS	NS	-10.76
Heat damage	-22.32	NS	-.77
Smut	NS	-4.70	-3.71
Test weight	4.70	NS	7.33

NS = same as table 2. ¹Estimates do not consider yield loss due to quality factors. ²Assumes an average yield of 47 cwt/acre and the respective factors occurring at the mean levels designated in table 1.

private and Federal graders are inconsistent in their interpretations, the realized loan value could be less or greater than the Federal loan rate. Whole kernels, test weight, mill yield, and general supply/demand conditions affect rice prices, but other factors that can be controlled by farmers may have significant impacts on prices. The impact of peck on the bid price is much larger relative to that of red rice, weed seed, chalk, heat damage, or smut. A producer can often justify considerable expense toward controlling the causes of price discounts associated with these factors. Although only the bid/acceptance markets in the Texas Gulf Coast area were studied here, the results likely apply in other markets and rice areas.

Reference

- Decker, Kermit. ASCS, USDA, College Station, Texas. Personal communication, 1983.
- Mullins, Troy, Warren R. Grant, and Ronald D. Krenz. "Rice Production Practices and Costs in Major U.S. Rice Areas, 1979." Arkansas Agricultural Experiment Station Bulletin No. 851, Mar. 1977.
- Newman, Ralph. American Rice, Inc. Personal communication, 1982.
- Parker, Melvin. Rice Belt Warehouse, Inc., El Campo, Texas. Personal communication, 1983.
- Stansel, James W. Texas Agricultural Experiment Station. Personal communication, 1982 and 1983.
- United States Department of Agriculture. *Crop Production, 1982 Annual Summary*. Statistical Reporting Service, Washington, D.C., Jan. 1983.

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- 7 Fruit
- 9 Sugar & Sweetener
- 13 World Supply & Demand
- 14 Tobacco
- 15 Dairy
- 22 Rice
- 29 Livestock & Poultry
- 30 Agricultural Outlook

October

- 13 World Supply & Demand
- 24 Oil Crops
- 25 World Supply & Demand
- 28 Vegetable
- 31 Agricultural Exports

November

- 7 Agricultural Outlook
- 9 Fruit
- 14 World Supply & Demand
- 17 Wheat
- 18 Feed
- 23 Cotton & Wool
- 29 World Agriculture
- 30 Agricultural Outlook

December

- 1 Livestock & Poultry
- 6 Sugar & Sweetener
- 13 World Supply & Demand
- 14 Dairy
- 15 Tobacco
- 16 Agricultural Finance

DYNAMIC RELATIONSHIPS OF RICE PRICES

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Abstract: Short-term movements among domestic and international rice prices were analyzed in this article. In the United States, mills play a crucial role in the price discovery mechanism of rice marketing, with the long grain Arkansas and the medium grain Louisiana mill prices leading other U.S. mill prices. However, no clear price leader was found for the European market.

Keywords: Rice prices, leads, lags, multipliers, adjustment period.

U.S. rice prices were largely determined by Government farm programs from 1955 through 1972. Since 1972, changes in both the general economic outlook and U.S. farm programs have been accompanied by greater price instability and an increased need for knowledge on the relationships among rice prices at all levels and locations in the marketing chain.

There are two objectives of this analysis. The first is to determine if a lead-lag relationship exists among rice prices. The second is to measure the impact of a sudden shock to the market and to provide insight on the speed of price adjustments in the rice marketing system. The effects of a one-time shock to the system over a long period of time are summarized by using long-run multipliers—the cumulative effect of a one-unit change in one price on another price. The adjustment period shows how long it takes the total effect to occur. Both the adjustment period and the long-run multiplier suggest implications about market efficiency—an efficient market should reflect changes in supply or demand conditions quickly and accurately. Thus, a shorter adjustment period, other things equal, indicates a more efficient market.

Short-term price movements are analyzed using the following prices: (1) U.S. farm, mill, and retail; (2) prices at four major U.S. milling centers and Thailand; (3) prices for Houston Texas, milled rice and rice byproducts and Kansas City corn; and (4) prices at the Hague, Netherlands, for the three major exporters to the European market—the United States, Argentina, and Thailand. The analyses used weekly price data from October 1976 to September 1981, with the exception of the analysis of U.S. farm, Texas mill, and U.S. retail rice prices. In this case, monthly data from January 1960 to January 1977 were used.

Two statistical techniques are used to investigate the price relationships. The first method—called the single-

variable approach—estimates an equation that contains two different prices when one price is dependent on the other. The second method—the multivariable approach—estimates an equation that contains the groups of prices under consideration.

Rice Pricing in the Marketing Channel

The effect of a change in prices at one level on prices at other levels should be positive, regardless of whether the price change is due to a shift in supply or in demand (Brorsen). For example if mills use their concentration levels to influence farm prices, farm prices would be expected to follow mill prices. If retail firms use a mark-up pricing system, retail prices would be expected to follow the others.

U.S. farm and Texas mill prices exhibit a strong instantaneous relationship (table 1). The retail price shows no instantaneous relationship to either the farm or mill price. However, both farm and mill price changes lead to changes in retail prices 2 months later. Changes in mill prices lead changes in farm prices.

When farm, mill, and retail prices are analyzed simultaneously, the analysis reaffirms that a change in mill price would lead to a change in farm prices. Prices at farm, mill, and retail levels take more than a month to adjust to a new equilibrium after a change in

Table 1.—The impact of changes in selected U.S. rice prices

Related prices	Multiplier ¹	Adjustment period
	Dollars per cwt	Months
Farm on farm	1.05	7
Mill on farm	*.51	2
Retail on farm	.05	0
Farm on mill	*.40	2
Mill on mill	*1.30	1
Retail on mill	-.04	0
Farm on retail	-.13	4
Mill on retail	*.64	2
Retail on retail	1.13	2

* = significant at the 5-percent level. ¹Interpret as the change in the second price due to a \$1.00 per cwt change in the first price. For example, if mill prices rise by \$1.00 per cwt, farm prices can be expected to rise by 51-cents per cwt over 2 months.

¹Brorsen is an assistant professor at Purdue University; Grant is an agricultural economist with the National Economics Division, Economic Research Service, USDA; and Chavas is an associate professor at the University of Wisconsin. This research was jointly funded by the Texas Rice Research Foundation under the Econo-Rice project, the Texas Agricultural Experiment Station, and ERS. More detailed analysis, including lagged and instantaneous statistical results, can be obtained from the authors upon request.

supply/demand conditions. The analysis suggests that, for example, a \$1 change in the mill price causes a 51-cent change in the farm price. However, the full adjustment in the farm price takes 2 months.

Retail prices follow both mill and farm prices, but retail prices do not change immediately after changes in farm and mill prices. Retailers may be reluctant to change their prices, possibly because of the expense of repricing or consumer resistance. Retail prices changed infrequently during the study period, with no apparent significant seasonal pattern.

Mills play a crucial role in the price discovery mechanism of rice marketing. Because milling firms are large, they may be able to take advantage of economies of size in processing information. Farm prices follow slightly behind mill prices. If most of the rice price fluctuations are due to variable export demand, then mill prices would change first, followed by changes in other levels of the marketing channel.

Different Locations

Weekly prices of milled rice used in this analysis include long grain prices in Arkansas, Texas, and Thailand and medium grain prices in Louisiana and California. Prices should be positively related, because the commodities are substitutes for each other. While differences in type could affect the results, the major impact on price adjustment is expected to arise from locational differences.

Distance should influence results. The California mill market is expected to have the weakest relationship with any other domestic mill market and the strongest relationship with Thailand's export price. The firms in these locations may not be able to compete with each other because of transportation costs. Therefore, they may be selling in different markets. The analysis bears this out.

All U.S. mill prices have some degree of immediate adjustment with each other, with the exception of California and Texas mill prices (table 2). The Thailand export price indicates no significant instantaneous adjustment with U.S. mill prices; evidence suggests that Thailand prices lag 10 to 20 weeks behind U.S. prices. Any changes in Arkansas and Louisiana prices lead to corresponding changes in California and Texas.

Similar results were obtained when all the mill prices in different locations were analyzed. Arkansas is the current leader in domestic production, although Louisiana led in acreage planted before 1974. These markets may benefit from economies of size in relation to the availability of information, and since they produce a large share of the U.S. rice crop, they would have more of an impact on prices. All price relationships are positive as expected, indicating the commodities behave as substitutes.

The only significant relationship between Thai and the U.S. markets is that Thai prices appear to have a long-run impact on California prices. But the milled rice export market in Thailand appears to be slow in responding to changing supply/demand conditions in its own milled rice market. This may be related to the

Table 2.—Impact of changes in milled rice prices at different locations

Related prices	Multiplier ¹	Adjustment period
	Dollars per cwt	Weeks
Louisiana on Louisiana	1.26	5
California on Louisiana	.34	1
Thailand on Louisiana	.34	4
Arkansas on Louisiana	*.61	3
Texas on Louisiana	.22	1
Louisiana on California	*.38	6
California on California	1.08	0
Thailand on California	*.52	7
Arkansas on California	.45	0
Texas on California	.06	0
Louisiana on Thailand	.11	6
California on Thailand	.08	0
Thailand on Thailand	*1.61	9
Arkansas on Thailand	.12	0
Texas on Thailand	.07	0
Louisiana on Arkansas	*.57	6
California on Arkansas	.22	0
Thailand on Arkansas	.37	8
Arkansas on Arkansas	1.48	5
Texas on Arkansas	.14	0
Louisiana on Texas	*.52	6
California on Texas	*.49	2
Thailand on Texas	.30	0
Arkansas on Texas	*.75	1
Texas on Texas	.78	1

* Significant at the 5-percent level. ¹ Same as footnote 1, table 1.

Government's policy of regulating the volume of rice exports to ensure adequate domestic supplies and maintain stable consumer prices.

Rice Byproduct Prices

The price relationship of the four major rice byproducts at Houston (second heads, brewers' rice, bran, and millfeed) were also investigated. Corn prices at Kansas City were also included because corn can be a major substitute for all the byproducts. The price of long grain rice at Houston was added to observe its impact on the byproduct prices.

Corn, second heads, brewers' rice, and head rice are major inputs in the brewing industry, accounting for 99 percent of the grain used as the adjunct in the brewing process, with about twice as much corn used as rice and rice byproducts (U.S. Department of the Treasury). These four commodities are expected to have a positive relationship, because a decrease in supply or an increase in demand in any one would result in increases in all prices.

Bran and millfeed are similar commodities. Millfeed contains bran and ground hulls. Both millfeed and bran are substitutes for corn in poultry feed. Therefore, prices of millfeed bran and corn are expected to be positively related.

A decrease in the supply of rough rice would increase the prices of long grain rice and the four byproducts. However, an increase in demand for just one of the byproducts would raise its price, resulting in an increased supply of

the other commodities; thus, the prices would be negatively correlated. The anticipated price relationships depend on whether price adjustments follow a shift in supply or a shift in demand.

Most rice byproduct prices do not appear to be related in the current period (table 3). However, millfeed and bran prices move closely together, and both are related to the lag values of the other. The analysis indicates that corn has little significant impact on rice byproduct prices, implying there is very little substitution between corn and the rice byproducts. There may be some substitution between long grain and either seconds or brewers' rice. Prices for long grain rice are related to brewers and seconds prices, but not to bran or millfeed prices. Because the prices of long grain rice and the four byproducts are not all related, it appears that shifts in the supply of rough rice were obscured by other factors in the rice byproduct markets during the observation period.

Table 3.—Impact of changes in rice byproduct prices

Related prices	Multiplier ¹	Adjustment period
	Dollars per cwt	Weeks
Brewers on brewers	.97	0
Long grain on brewers	-.02	0
Seconds on brewers	.05	0
Bran on brewers	-.14	0
Mill feed on brewers	.04	0
Corn on brewers	.28	0
Brewers on long grain	-.08	0
Long grain on long grain	*.86	1
Seconds on long grain	.08	0
Bran on long grain	-.50	0
Mill feed on long grain	-.21	0
Corn on long grain	.34	0
Brewers on seconds	-.05	0
Long grain on seconds	*.08	1
Seconds on seconds	.93	0
Bran on seconds	-.18	0
Mill feed on seconds	.18	0
Corn on seconds	.33	0
Brewers on bran	.01	0
Long grain on bran	.02	0
Seconds on bran	-.05	0
Bran on bran	*1.31	2
Mill feed on bran	*.39	1
Corn on bran	*.42	2
Brewers on mill feed	-.03	0
Long grain on mill feed	.01	0
Seconds on mill feed	-.01	0
Bran on mill feed	*.18	2
Mill feed on mill feed	*1.25	1
Corn on mill feed	.22	0
Brewers on corn	-.02	0
Long grain on corn	-.01	0
Seconds on corn	-.01	0
Bran on corn	-.01	0
Mill feed on corn	-.12	0
Corn on corn	*1.36	1

* Significant at the 5-percent level. ¹Same as footnote 1, table 1.

Rice Prices in The Hague

The Hague is a major European rice market, and the United States, Thailand, and Argentina are major rice

exporters into Europe. Rice from these three countries is similar in quality and type; therefore, they should be substitutes and show positive price relationships. The United States is a major supplier to the European Community (EC) with 27 percent of the market during the study period. Argentina had only a 5-percent market share, but exports 43 percent of its rice to the EC, whereas the U.S. ships only 10 percent, so the European market is important in determining the price of Argentina's rice. Thailand has a European market share slightly larger than Argentina's, but less than 5 percent of its exports go to the EC.

U.S. and Argentine rice prices move very closely together (table 4). The seasonal pattern for these prices corresponds to U.S. harvests, indicating Argentine prices are heavily influenced by those in the United States. However, the Argentine market anticipates price movements in Europe better than the U.S. market, possibly because the Argentine market is more efficient in processing information from Europe. Of greater significance, Argentina's market may be heavily influenced by what is happening in Europe because of Argentina's larger percentage of rice exports to this market.

Table 4.—Impact of changes in rice prices in The Hague

Related prices	Multiplier ¹	Adjustment period
	Dollars per cwt	Weeks
Argentina on Argentina	*1.21	2
Thailand on Argentina	*.20	2
United States on Argentina	*.15	2
Argentina on Thailand	.13	2
Thailand on Thailand	1.16	0
United States on Thailand	.10	0
Argentina on United States	*.53	3
Thailand on United States	*.34	2
United States on United States	1.13	2

* Significant at the 5-percent level. ¹Same as footnote 1, table 1.

Thai prices exhibit no instantaneous relationship with either Argentine or U.S. prices. However, Thai prices are related to these other prices over a lag period of 10 to 20 weeks. When all three prices are analyzed together, Thai prices have a long-run, but small, impact on Argentine and U.S. prices. Thai prices are primarily influenced by non-European factors, whereas Argentine and U.S. prices are influenced by the European market, and react quickly to changes in the price of Thai rice delivered to Europe. Distance may also be important; Argentine and U.S. markets are closer to each other and closer to Europe.

Summary

This investigation of short-term price movements discusses where prices are set in the market (lead-lag relationships) and how one price affects another (multipliers and adjustment period). In the domestic market, mill prices play an important role in price discovery. The analysis indicates that a \$1 change today in the Texas mill price leads to a 51-cent change in the U.S. farm price and a 64-cent change in retail prices over the sub-

sequent 2 months. In export markets, the Thai price is often considered the world price. The results indicate the Thai mill price is not an ideal indicator of future price adjustments, since it tends to lag behind U.S. prices. The long grain mill prices in Arkansas or the medium grain mill prices in Louisiana are better indicators of future farm prices.

The weak relationships between the prices of rice, its byproducts, and corn imply little substitution exists

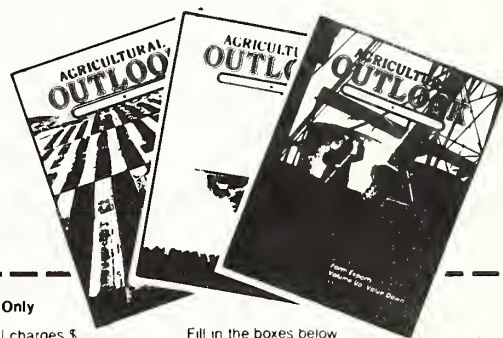
between the commodities. The brewing industry asserts that rice is used as a primary input rather than a substitute for corn and the results support this assertion. Bran and millfeed prices may be driven by the feedstuff market, although this was not tested in this analysis.

The impact of changes in Thai prices at The Hague, on U.S. prices at The Hague occur quickly. However, Thai prices are very slow to respond to changes in Argentine and U.S. prices, which follow each other closely. No clear price leader was indicated for the European market.

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Table 1.--Rice (rough equivalent): supply, disappearance, area, and prices 1/

Item	1980/81	1981/82	1982/83 (prel.)	1983/84 (proj.)
<u>Million cwt</u>				
<u>Supply</u>				
Beginning stocks, August 1	25.7	16.5	49.0	66.6
Production	146.2	182.7	154.2	103.9
Total 2/	172.1	199.6	203.8	171.1
<u>Disappearance</u>				
Domestic 3/	64.2	68.6	68.0	72.0
Exports	91.4	82.0	69.2	69.0
Total	155.6	150.6	137.2	141.0
Ending stocks, July 31	16.5	49.0	66.6	30.1
<u>Million acres</u>				
<u>Area</u>				
Planted	3.38	3.83	3.29	2.34
Harvested	3.31	3.79	3.25	2.25
Allotment/nat'l program	1.80	1.80	--	--
<u>Pounds per acre</u>				
Yield per harvested acre	4,413	4,819	4,742	4,627
<u>Dollars per cwt</u>				
<u>Prices</u>				
Received by farmers	12.80	9.05	8.18	8 50-10.00
Loan rate	7.12	8.01	8.14	8.14
Target rate	9.49	10.68	10.85	11.40

1/ Consolidated supply and disappearance of rough and milled rice. Milled-rice data converted to rough-rice basis using annually derived extraction rates as factors. 2/ Includes imports. 3/ Includes food, seed, brewers' use, and a residual. Food use includes shipments to U.S. territories.

Table 2.--Rough rice: marketing year supply and disappearance 1/

Item	Year beginning August 1				
	1978	1979	1980	1981 2/	1982 2/
	1,000 cwt				
Beginning stocks	21,128	25,138	20,093	9,840	41,387
Farm production	133,170	131,947	146,150	182,742	154,216
Supply	154,298	157,085	166,243	192,582	195,603
Domestic 3/	126,387	135,322	155,989	145,410	136,740
Exports	2,773	1,670	414	5,785	574
Disappearance	129,160	136,992	156,403	151,195	137,314
Ending stocks, July 31	25,138	20,093	9,840	41,387	58,289

1/ Includes supply and disappearance of rough rice only. 2/ Preliminary.

3/ Includes mill use, seed, and a residual.

Table 3.--Milled rice: marketing year supply and disappearance 1/

Item	Year beginning August 1				
	1978	1979	1980	1981 2/	1982 2/
	1,000 cwt				
Beginning stocks	4,347	4,583	4,035	4,855	5,477
Production	83,427	89,820	103,037	95,074	84,475
Imports	49	45	160	278	469
Supply	87,823	94,448	107,232	100,207	90,421
Food 3/	23,763	23,868	27,957	30,702	26,466
Brewers' use	7,872	8,093	8,001	9,123	9,560
Exports	51,605	58,452	66,419	54,905	48,499
Disappearance	83,240	90,413	102,377	94,730	84,525
Ending stocks, July 31	4,583	4,035	4,855	5,477	5,896

1/ Includes supply and disappearance of milled rice only. 2/ Preliminary.

3/ Includes shipments to U.S. territories.

Table 4--Rice, rough equivalent: CCC operations and privately held stocks, 1970-82

Crop of	Placed under price support			Delivered to CCC 1/	Total carryover	At year end July 31			Privately held ("Free") Stocks 3/
	Loans	Direct purchases	Total			CCC stocks and loans outstanding		Total	
						Stocks owned by CCC 2/	Under loan 2/		
1,000 cwt									
1970	20,787	733	21,520	3,528	18,634	9,329	138	9,467	9,167
1971	31,235	107	31,342	1,214	11,434	2,720	27	2,747	8,687
1972	22,926	---	22,926	1	5,139	148	---	148	4,991
1973	19,146	---	19,146	---	7,842	---	---	---	7,842
1974	9,256	---	9,256	1	7,058	---	4	4	7,054
1975 4/	21,475	1,781	23,256	19,214	36,875	19,214	---	19,214	17,661
1976 4/	23,425	608	24,033	7	40,501	18,610	5/ 111	18,721	21,780
1977 4/	19,541	---	19,541	---	27,398	10,772	---	10,772	16,626
1978 4/	27,114	---	27,114	---	31,618	8,300	---	8,300	23,318
1979 4/	25,911	---	25,911	---	25,679	1,700	---	1,700	23,979
1980 4/	24,973	---	24,973	---	16,493	---	---	---	16,493
1981 4/	42,848	---	42,848	17,500	48,987	17,500	---	17,500	31,487
1982 4/	65,375	---	65,375	6,120	66,632	22,320	---	22,320	44,312

1/ Includes direct purchases. 2/ May include small quantities of new-crop rice in last few years.
 3/ Derived by subtracting CCC stocks and loans outstanding from total carryover. 4/ Based on operating reports, prior years based on fiscal reports. 5/ Under current loan 64,787 cwt.; under resale 47,000 cwt.

Source: Agriculture Stabilization and Conservation Service, USDA.

Table 5--Rice, rough: acreage, yield, and production

State	Acreage				Yield per harvested acre		Production	
	Planted		Harvested					
	1982	1983 1/	1982	1983 1/	1982	1983 1/	1982	1983 1/
	1,000 acres		1,000 acres		Pounds		1,000 cwt	
Arkansas	1,350	950	1,330	935	4,290	4,250	57,037	39,738
California	540	340	535	337	6,850	6,800	36,651	22,916
Louisiana	600	450	598	385	4,160	4,000	24,862	15,400
Mississippi	240	160	235	155	4,200	4,200	9,870	6,510
Missouri	80	55	80	55	4,480	4,200	3,582	2,310
Texas	475	380	474	379	4,690	4,500	22,214	17,055
United States	3,285	2,335	3,252	2,246	4,742	4,627	154,216	103,929

1/ Preliminary.

Source: Crop Production, Crop Reporting Board, SRS, USDA.

Table 6.--Rice stocks: rough and milled, for selected dates 1/

Date and year	Rough					Milled			
	On farms or in farm ware-houses	At mills and in attached ware-houses	In ware-houses (not attached to mills)	In ports or in transit	Total all positions	At mills and in attached ware-houses	In ware-houses (not attached to mills)	In ports or in transit	Total all positions
1,000 cwt									
January 1									
1979	28,089	16,829	50,100	899	95,917	3,517	542	2,080	6,139
1980	31,021	15,038	57,278	581	103,918	3,137	810	2,123	6,070
1981	26,179	21,111	48,817	6	96,113	3,055	929	2,556	6,540
1982 2/	48,404	22,952	59,117	911	131,384	2,735	907	1,414	5,056
1983 2/	34,551	24,151	74,040	200	132,942	2,960	858	2,401	6,219
April 1									
1979	14,381	18,158	34,161	820	67,520	3,979	282	2,444	6,705
1980	12,030	15,581	39,224	563	67,398	3,500	402	2,888	6,790
1981	5,977	15,078	28,673	64	49,792	3,499	1,099	3,214	7,812
1982 2/	26,807	21,289	41,773	411	90,280	4,371	725	1,689	6,785
1983 2/	23,778	22,307	60,649	299	107,033	3,295	492	3,165	6,952
August 1									
1979	623	8,781	15,033	701	25,138	2,531	374	1,678	4,583
1980	563	9,248	9,940	342	20,093	2,128	403	1,504	4,035
1981	208	5,417	4,206	9	9,840	2,744	446	1,665	4,855
1982 2/	4,453	12,544	23,906	484	41,387	3,191	409	1,877	5,477
1983 2/	6,032	11,190	41,031	36	58,289	2,843	223	2,830	5,896

1/ These estimates do not include stocks located in States outside the major producing States of Missouri, Mississippi, Arkansas, Louisiana, Texas, and California. 2/ Preliminary.

Source: Rice Stocks, Crop Reporting Board, USDA.

Table 7.--Rough rice milled, total milled production, and milling yields, United States

Year beginning August	Rough milled	Total milled produced 1/	Milling yields	Total heads produced 1/	Milling yields
	1,000 cwt		Pounds per cwt	1,000 cwt	Pounds per cwt
1978	117,961.0	83,427.0	70.72	68,749.0	58.28
1979	124,340.0	89,820.0	72.24	78,942.8	63.49
1980	141,192.0	103,037.0	72.98	89,601.7	63.46
1981	131,922.0	95,074.0	72.07	82,010.7	62.17
1982 2/	119,536.0	84,475.0	70.67	73,764.2	61.71

1/ Includes brown rice. 2/ Preliminary.

Source: Monthly Statistical Statement, Rice Miller's Association, and Rice Market News, Agricultural Marketing Service, USDA.

Table 8--Rice: value factors for computing support rates, for various rice classes 1/

Group and variety	1978	1979	1980	1981	1982	1983
<u>Dollars per cwt</u>						
National average loan rate	6.40	6.79	7.12	8.01	8.14	8.14
Head rice, whole kernels						
Long	11.25	12.18	12.76	14.54	14.75	14.96
Medium	9.75	10.43	11.01	12.79	12.75	12.21
Short	9.75	10.43	11.01	12.79	12.75	12.21
Broken rice, all classes	4.65	4.40	4.25	4.70	5.00	6.20
<u>Cents per 100 pounds</u>						
<u>Premiums and Discounts</u>						
<u>By grades</u>						
U.S. No. 1	+5	+8	+8	+8	+8	--
2	0	0	0	0	0	--
3	-15	-15	-15	-15	-15	-30
4	-30	-30	-30	-30	-30	-60
5	-50	-50	-50	-50	-50	-1.00

1/The method of computing 1978-83 crop rough rice basic support rates is the same as that used in prior rice programs except that under the new rice standards, rice is classified by size and shape of kernel rather than variety. The basic support rates are applicable to No. 2 rice and will be adjusted by the above premium and discounts for U.S. grades per lb. A further discount for location, to adjust for transportation costs of moving the rough rice to an area where competitive milling facilities are available will also be made for rice produced in certain areas.

Source: Agricultural Stabilization and Conservation Service, USDA.

Table 9.--Rough rice: average price received by farmers, by States and United States

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Season average 1/
<u>Dollars per cwt</u>													
<u>Arkansas</u>													
1978 2/													8.47
1979	9.21	9.92	9.97	9.92	9.37	9.95	11.10	11.60	11.50	11.00	10.60	10.50	10.60
1980	9.74	9.70	10.30	11.40	12.70	12.90	12.50	13.20	14.10	13.10	12.40	12.20	12.30
1981	11.90	10.30	9.95	9.67	9.34	9.27	8.82	8.53	8.07	8.51	8.67	8.32	9.37
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<u>Louisiana</u>													
1978 2/													7.50
1979	9.97	9.77	10.20	10.40	9.71	9.93	11.10	11.90	12.00	11.90	11.30	11.10	10.60
1980	10.10	9.76	10.40	11.10	13.10	13.90	14.00	14.10	14.30	13.90	4/	12.10	12.00
1981	11.60	10.80	10.30	9.61	9.24	8.74	8.29	7.84	7.75	7.90	8.00	7.87	9.36
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<u>Mississippi</u>													
1978 2/													7.98
1979	6.89	10.50	10.50	9.31	8.92	9.49	11.30	11.30	10.90	4/	10.80	10.50	10.30
1980	10.30	10.40	11.60	12.20	13.40	13.70	11.80	13.60	13.70	4/	4/	4/	12.70
1981	4/	10.90	11.00	10.80	9.93	9.10	8.55	8.17	8.13	7.39	8.25	7.97	9.14
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<u>Texas</u>													
1978 2/													9.27
1979	10.30	11.00	11.40	11.30	11.10	12.40	12.00	11.90	12.10	11.10	10.50	11.00	11.60
1980	11.20	11.50	12.30	13.30	13.90	13.60	13.90	14.10	14.20	13.80	12.60	13.60	12.80
1981	12.80	11.90	10.90	10.10	9.83	9.27	9.54	9.20	8.98	9.44	9.34	8.66	10.40
1982 3/	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
<u>United States 5/</u>													
1978	8.44	7.56	7.62	7.76	7.98	8.07	7.87	8.18	8.52	8.74	8.73	9.10	8.16
1979	10.00	9.81	10.30	9.83	9.41	9.88	11.00	11.70	11.60	11.30	10.20	10.80	10.50
1980	10.60	10.20	10.90	11.60	13.10	13.20	13.00	13.40	13.80	13.30	11.90	12.80	12.80
1981	11.80	10.70	10.20	9.86	9.34	9.34	9.46	8.99	8.54	8.55	8.54	8.25	9.05
1982 3/	7.31	7.75	7.73	7.78	8.06	8.05	8.26	7.99	8.23	8.23	7.88	7.95	8.18

1/ State and U.S. season average prices include an allowance for unredeemed loans and purchases by the Government, valued at the average loan rate, by States. Monthly prices do not include this allowance.
 2/ Monthly prices by States discontinued September 1976 to July 1979. 3/ As of August 1982, prices not reported by States. 4/ Not published separately to avoid disclosure of individual operations. 5/ California is excluded in the monthly averages but is included in the U.S. season average. N.A. = Not available.

Source: Agricultural prices, Crop Reporting Board, SRS, USDA.

Table 10.--Milled rice: average price for U.S. No. 2, f.o.b. mills, at selected milling centers

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
Dollars per cwt bagged													
Long 1/	Southwest Louisiana												
1979	21.50	21.50	22.05	22.50	21.00	20.60	22.50	24.30	24.00	23.25	21.80	20.90	22.15
1980	20.75	22.00	23.40	25.00	25.75	27.00	27.25	27.70	28.25	28.00	27.90	27.50	25.95
1981	25.40	24.30	23.25	21.90	20.75	19.80	18.60	18.00	17.55	17.60	17.20	17.00	20.20
1982 2/	17.50	17.40	17.50	17.55	18.40	18.35	17.50	17.50	18.50	18.50	18.60	18.75	18.00
	Houston, Texas												
1979	21.10	21.25	22.30	22.10	21.10	20.10	22.75	24.80	24.10	23.00	21.00	21.00	22.05
1980	21.00	21.70	23.10	24.75	26.55	26.55	25.75	27.10	27.75	28.00	27.40	27.00	25.55
1981	25.00	24.85	23.50	22.60	22.00	21.75	20.20	19.20	19.00	19.00	18.75	17.75	21.15
1982 2/	18.25	18.75	18.00	18.00	18.00	19.00	19.00	19.00	19.00	19.00	19.10	19.40	18.70
	Arkansas												
1979	21.50	23.50	24.00	23.00	21.35	20.10	22.40	24.00	23.75	22.25	21.50	20.50	22.30
1980	20.60	22.00	23.40	24.90	26.10	26.10	25.75	26.70	27.50	28.00	27.90	27.50	25.55
1981	26.40	24.30	23.05	22.30	20.85	19.60	19.00	18.20	17.55	17.40	17.20	16.60	20.20
1982 2/	17.10	17.00	17.00	17.55	18.40	18.35	17.50	17.50	18.00	18.40	18.50	18.50	17.80
Medium 1/	Southwest Louisiana												
1979	19.40	20.00	20.40	20.50	19.60	20.00	22.60	23.80	24.00	23.60	21.80	20.90	21.40
1980	20.50	20.80	21.50	24.40	26.40	27.00	27.10	27.50	27.55	28.00	28.00	27.75	25.55
1981	23.40	24.20	22.90	21.15	20.00	18.75	17.75	16.10	15.95	16.40	16.20	16.00	19.30
1982 2/	16.50	16.50	16.45	16.65	17.75	17.30	16.50	16.50	16.50	17.10	17.50	17.50	16.90
	Arkansas												
1979	19.50	22.25	22.50	22.40	21.50	21.40	22.60	24.00	23.90	22.25	21.55	20.50	20.05
1980	20.60	21.30	22.50	24.00	25.75	26.10	25.75	26.70	27.40	28.00	28.00	27.50	25.30
1981	26.40	24.10	22.95	21.30	19.85	18.60	17.90	17.05	16.50	16.40	15.90	15.60	19.40
1982 2/	16.10	16.50	16.10	16.65	17.75	17.10	16.50	16.50	16.60	17.10	17.50	17.50	16.80
Medium 3/	California												
1979	22.50	23.00	23.00	23.00	23.00	23.00	25.10	24.70	23.00	23.00	23.00	23.00	23.30
1980	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.70
1981	30.00	27.60	24.50	22.80	21.40	20.50	19.10	18.45	16.90	16.90	16.70	15.40	20.95
1982 2/	16.25	16.10	15.55	15.50	15.50	16.50	16.00	16.00	16.00	15.90	15.95	15.75	15.90
Short 3/													
1979	20.50	21.00	21.00	21.00	21.00	21.00	23.00	23.00	23.00	23.00	23.00	23.00	21.95
1980	23.00	23.20	24.75	25.00	26.75	30.00	30.00	30.00	30.00	30.00	30.00	30.00	27.70
1981	30.00	28.25	25.75	23.90	22.00	22.00	20.25	19.50	18.25	18.25	18.25	18.10	22.05
1982 2/	17.20	16.70	15.55	15.50	15.50	16.90	16.00	16.00	16.00	16.00	16.00	16.00	16.10

1/ U.S. No. 2--broken not to exceed 4 percent. 2/ Preliminary. 3/ U.S. No. 1.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Table 11.--Rice by-products: monthly average price, southwest Louisiana

Year and type	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
<u>Dollars per cwt, bagged 1/</u>													
Milled, long second head													
1979	8.25	8.45	9.00	9.50	9.50	10.10	11.00	11.90	12.50	12.50	12.50	12.25	10.60
1980	11.05	10.70	11.00	11.15	12.45	12.90	12.75	13.55	13.40	14.45	14.55	14.10	12.65
1981	13.00	11.90	11.00	11.00	11.00	10.60	10.00	8.60	9.25	10.00	10.00	10.00	10.55
1982	10.00	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75	9.75
<u>Dollars per ton 2/</u>													
Rice bran, f.o.b. mills													
1979	58.00	61.50	79.80	85.90	88.85	94.15	60.75	51.60	52.00	62.75	65.50	66.75	68.95
1980	76.90	84.70	86.40	95.50	N.Q.	101.90	73.60	59.10	57.50	60.00	71.60	69.15	76.05
1981	51.50	49.60	52.75	59.90	73.65	82.50	64.35	50.40	55.50	57.50	61.10	N.Q.	59.90
1982	52.80	53.00	54.00	77.65	85.00	77.50	52.15	47.25	59.65	70.30	61.25	N.Q.	62.80
<u>Dollars per ton 2/</u>													
Rice millfeed, f.o.b. mills													
1979	20.35	19.25	25.90	30.25	40.65	45.65	18.15	13.50	11.00	11.25	11.10	15.25	21.85
1980	29.50	37.40	35.00	36.90	48.40	54.00	15.00	11.00	14.95	17.00	27.00	31.40	29.80
1981	22.60	10.90	17.75	22.00	30.65	29.75	16.50	13.15	13.40	15.40	19.40	N.Q.	19.25
1982	16.00	16.75	15.25	26.15	35.00	45.00	13.50	15.25	19.35	23.60	22.10	23.00	22.60

1/U.S. No. 4 or better. 2/Prices quoted as bulk. N.Q. = Not quoted.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Table 12.--Brewers prices: monthly average price for Arkansas brewers' rice and New York brewers' corn grits

Year and State	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Simple average
<u>Dollars per cwt</u>													
Arkansas													
1979/80	7.05	7.30	7.90	8.25	8.50	9.00	9.40	9.65	9.75	9.75	9.75	9.75	8.85
1980/81	9.75	9.75	9.80	10.10	10.00	10.00	10.00	10.00	10.00	10.00	9.60	9.50	9.90
1981/82	9.30	9.00	8.55	8.25	8.25	8.20	7.60	7.40	7.30	7.00	7.00	6.80	7.90
1982/83	6.55	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
New York													
1979/80	N.Q.	9.65	9.89	9.69	9.99	9.90	10.10	10.05	10.10	10.24	10.27	11.20	10.10
1980/81	11.60	12.11	12.26	12.74	12.42	12.44	12.60	12.64	12.72	12.42	12.57	12.85	12.45
1981/82	12.22	10.45	10.16	9.96	9.97	9.97	10.28	10.48	10.82	10.75	10.66	10.43	10.51
1982/83	9.91	9.75	9.60	9.74	9.78	10.07	10.52	10.82	11.35	11.32	11.58	12.06	10.54

N.Q. = Not quoted.

Source: Rice Market News, Agricultural Marketing Service, USDA, and Milling and Baking News.

Table 13.--Thailand milled rice prices, f.o.b. Bangkok, by month 1/

Type and month	1977/78	1978/79	1979/80	1980/81	1981/82	1982/83
<u>Dollars per metric ton</u>						
100% 1st grade						
August	306	396	378	463	528	330
September	306	399	390	463	517	313
October	306	390	392	463	485	295
November	321	345	394	484	458	299
December	352	324	409	491	409	307
January	368	329	425	491	378	301
February	402	330	428	501	364	318
March	425	344	443	529	370	330
April	440	346	447	540	356	330
May	438	348	459	544	342	330
June	432	352	463	560	334	319
July	414	355	463	551	325	311
Average	376	355	424	507	406	315
100% 2nd grade						
August	290	381	363	450	508	300
September	290	384	375	450	497	283
October	291	375	377	450	465	266
November	307	330	382	471	438	269
December	338	309	394	478	389	277
January	352	314	410	478	352	270
February	388	315	413	488	332	280
March	410	329	428	514	340	290
April	425	331	432	525	326	290
May	423	333	444	529	312	290
June	418	337	450	545	304	279
July	399	340	450	533	295	271
Average	361	340	410	493	380	280
5% brokens						
August	275	366	349	442	498	287
September	275	369	360	442	487	270
October	278	360	362	442	455	255
November	294	315	364	463	428	258
December	324	294	379	470	379	266
January	338	299	395	470	342	260
February	374	300	399	480	324	270
March	396	314	415	505	325	282
April	411	316	419	515	311	282
May	409	318	433	519	299	280
June	404	324	442	535	291	269
July	384	327	442	523	282	261
Average	347	325	397	484	368	270

1/ Includes export premium, export tax, and cost of bags. Packed in bags of 100 kgs. net.

Source: Rice Market News, Agricultural Marketing Service, USDA.

Table 14.--Milled rice: average c.i.f. quotations by months, at Rotterdam

Type and month	1979/80	1980/81	1981/82	1982/83
U.S. Dollars per metric ton				
United States No. 2 milled, 4%, bagged				
August	573	552	629	515
September	570	567	601	463
October	569	602	587	449
November	573	639	562	446
December	551	656	538	451
January	551	661	517	459
February	606	670	508	488
March	650	672	485	496
April	636	672	469	504
May	595	675	474	513
June	561	662	487	532
July	557	649	506	535
Average	583	640	530	488
Thai SWR 100% Grade A, bagged				
August	428	535	603	369
September	456	543	600	363
October	464	539	570	347
November	446	545	520	352
December	452	550	483	363
January	484	580	438	360
February	485	614	424	366
March	506	627	426	389
April	521	620	422	376
May	534	632	408	382
June	552	657	376	372
July	546	641	346	367
Average	490	590	468	367
Thai SWR 100% Grade B, bagged				
August	412	520	583	342
September	439	528	579	338
October	448	523	549	322
November	431	528	497	328
December	438	535	463	338
January	469	549	418	336
February	472	588	402	335
March	490	602	405	348
April	506	600	401	336
May	519	611	382	342
June	537	633	352	335
July	531	619	319	330
Average	474	570	446	336

Source: Rice Market News, Agricultural Marketing Service, USDA

Table 15.--World rice production and stocks: selected countries or regions 1/

Country or region	Crop year 2/				1983/84 as of Sept. 14
	1979/80	1980/81	1981/82	1982/83	
<u>Million metric tons</u>					
Bangladesh	19.1	20.8	20.5	21.3	21.8
Burma	9.8	13.2	13.6	14.4	14.0
China, Mainl.	143.8	139.9	144.0	161.2	152.0
India	63.6	80.5	80.5	68.8	80.3
Indonesia	26.3	29.7	32.8	34.1	33.8
Japan	14.9	12.2	12.8	12.8	13.7
Korea, Rep. of	7.3	6.0	7.1	7.3	7.6
Pakistan	4.8	4.7	5.1	5.1	5.3
Thailand	15.8	17.4	17.8	16.8	17.7
Subtotal	305.4	324.4	334.2	341.8	346.2
Argentina	0.3	0.3	0.4	0.3	0.3
Australia	0.6	0.7	0.9	0.5	0.7
Brazil	9.6	8.6	9.2	7.8	9.5
EC-10	1.3	1.1	1.0	1.1	1.1
All others	53.9	55.5	57.5	58.9	57.7
Total non-U.S.	371.1	390.6	403.1	410.4	415.7
U.S.	6.0	6.6	8.3	7.0	4.7
World total	377.1	397.3	411.4	417.4	420.4
Ending stocks 3/					
Non-U.S.	22.5	21.7	19.6	14.1	13.5
U.S.	0.8	0.5	1.6	2.1	1.2
World total	23.4	22.2	21.2	16.3	14.7

1/Production is rough basis, but ending stocks are milled basis. 2/World rice harvest stretches over 6-8 months. Thus, crop year represents the crop harvested in late 1979 and early 1980 in the Northern Hemisphere and the crop harvested in early 1980 in the Southern Hemisphere. 3/Stocks are based on an aggregate of different local marketing years, and should not be construed as representing world stock levels at a fixed point in time. Also, stocks data are not available for all countries.

Source: World Grain Situation, Foreign Agricultural Service, USDA.

Table 16.--World rice trade (milled basis): exports and imports of selected countries or regions 1/

Country or region	Calendar year				
	1980	1981	1982	1983	1984 as of Sept. 14
<u>1,000 metric tons</u>					
EXPORTS					
United States	2,977	3,008	2,487	2,200	2,200
Argentina	107	110	125	75	120
Australia	321	335	530	350	450
Burma	675	674	701	850	900
China, Mainl.	1,116	583	470	700	750
China, Taiwan	261	92	307	550	500
EC-10	804	785	810	782	818
Egypt	178	134	22	35	35
Guyana	81	78	36	35	50
India	423	1,143	633	250	250
Japan	653	795	318	375	275
Korea, N.	284	200	250	300	300
Nepal	10	43	50	0	0
Pakistan	968	1,127	794	1,250	1,200
Philippines	231	83	0	100	0
Thailand	2,700	3,049	3,620	3,600	3,400
Uruguay	165	215	227	165	225
Other	740	648	511	757	481
WORLD TRADE	12,694	13,102	11,891	12,374	11,954
IMPORTS					
Bangladesh	168	34	415	100	100
Brazil	239	142	124	400	400
Canada	99	105	108	115	120
China, Mainl.	18	110	250	150	100
Cuba	224	200	200	200	200
East Europe	332	352	295	284	317
EC-10	889	1,079	1,148	809	805
Hong Kong	359	360	353	350	350
Indonesia	2,040	543	332	1,750	1,500
Iraq	379	350	369	500	400
Iran	507	583	475	650	650
Ivory Coast	257	335	363	375	350
Korea, S.	822	2,292	228	221	100
Kuwait	85	95	100	110	110
Malagasy	177	193	357	250	250
Malaysia	167	267	392	350	300
Mexico	128	66	16	0	20
Nigeria	394	673	651	650	700
Peru	250	103	63	150	170
Portugal	20	128	110	60	75
Saudi Arabia	356	427	471	500	525
Senegal	304	340	357	375	400
Singapore	187	178	192	180	175
South Africa	126	134	146	135	140
Sri Lanka	189	168	186	160	100
Syria	39	72	110	120	120
U.A. Emirates	441	285	170	175	175
USSR	694	1,283	859	500	500
Viet Nam, Soc. Rep.	135	140	130	75	100
Other	2,669	2,065	2,921	2,680	2,702
WORLD TRADE	12,694	13,102	11,891	12,374	11,954

Source: World Grain Situation, Foreign Agriculture Service, USDA.

LIST OF TABLES

	Table	Page
Supply and Distribution—United States		
Rough equivalent, marketing years, 1980-83	1	16
Rough only, marketing years, 1978-82	2	17
Milled only, marketing years, 1978-82	3	17
CCC: Commodity Credit Corporation rice operations		
for selected crop years, rough rice equivalent	4	18
Acreage, yield and production, 1982-83	5	18
Stocks, rough and milled, for selected dates	6	19
Rough rice milled, milled production, and		
milling yields, 1978-82	7	19
Prices		
Value factors for computing support rates, 1978-83	8	20
Received by farmers, monthly, by States, and		
United States 1978-83	9	21
Milled rice, average price at selected milling		
centers, by months, 1979-83	10	22
Rice by-products, monthly average price at southwest		
Louisiana, 1979-83	11	23
Arkansas brewers rice and New York brewers corn grits		
by months, 1979-83	12	23
Thailand prices f.o.b., Bangkok by months, 1977-83	13	24
Average c.i.f., quotations by months, at Rotterdam, 1979-83	14	25
World		
Production and stocks, for selected countries		
or regions, 1979-83	15	26
Trade, by country or region, calendar years 1980-84	16	27



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